

REMARKS

Claims 3-21 and 23-24 are pending in the application.

Claim Amendments

By this amendment, claims 1 and 22 are cancelled.

Independent claim 23 is amended to recite the phrase "independent from and" in connection with the description of the control means in the last paragraph of the claim. New claim 24 is added directed to limitations present in cancelled claim 1, with claim 24 depending from claim 23. The dependencies of claims 3, 5, 8, 10, 15, 16, 17, and 18 are changed accordingly. Claim 23 is now the sole independent claim which remains pending.

Interview with Examiner

Applicants thank the Examiner for the courtesy extended toward their representative during the interview of July 28, 2004. During the interview, the above claim amendments were discussed. No agreement was reached regarding the withdrawal of the outstanding rejections. The substance of the comments presented during the interview is set forth in detail below.

Applicants' Invention

Applicants' invention is directed to an exhaust gas purifying apparatus of an internal combustion engine that includes: a light-off catalyst provided in an exhaust passage and having an O₂ storage capability such that the light-off catalyst passes, therethrough, at least CO in an exhaust gas to a downstream side of the light-off catalyst when the internal combustion engine is operating under a condition where the oxygen concentration of the exhaust gas is reduced; exhaust gas purifying means provided in the exhaust passage at a downstream position of and in series with the light-off catalyst, the exhaust gas purifying means having a NO_x catalyst for adsorbing NO_x in the exhaust gas when an air-fuel ratio of the exhaust gas is lean and releasing the adsorbed NO_x when the oxygen concentration of the exhaust gas is reduced, the exhaust gas purifying means further having a three-way catalyst that reacts with the released NO_x.

The control means repeatedly releases NO_x adsorbed by the NO_x catalyst every first interval and repeatedly releases SO_x adsorbed by the NO_x catalyst every second interval *independent from and* longer than the first interval.

Claim Rejections under 35 USC 102

(a) Rejection of Claim 22 over Hepburn et al

Claim 22 stands rejected under 35 USC 102(e) as being anticipated by Hepburn et al '788. This rejection is respectfully traversed to the extent deemed to apply to the claims as amended.

In response, claim 22 is cancelled. The rejection is now moot and should be withdrawn.

(b) Rejection of Claim 23 over Murachi et al

Claim 23 stands rejected under 35 USC 102(e) as being anticipated by Murachi et al '989. This rejection is respectfully traversed to the extent deemed to apply to the claims as amended.

Murachi is directed to a method for purifying exhaust gas of a diesel engine. Murachi discloses, in Fig. 1, a diesel engine 1 provided with an oxidizing catalyst 5 disposed at a downstream position of the engine 1, a diesel particulate filter (DPF) 7 provided downstream of the catalyst 5, and a NOx absorbent 9 provided downstream of the DPF 7.

The Examiner refers to the statements in col. 8, lines 43-64 of Murachi and alleges that Murachi discloses the control means as recited in claim 23 of the present application. Applicants respectfully disagree.

Murachi states, in col. 8, lines 43-64, that since the sulfate formed in the NOx absorbent is more stable than the nitrate formed by NOx, a temperature higher than the normal regenerating operation of the NOx absorbent is required to release sulfate from the absorbent, and also that the NOx absorbent 9 is regenerated at a exhaust gas temperature higher than that in the normal regenerating operation during the regenerating operation of the DPF 7 to release sulfate as well as NOx from the NOx absorbent 9. In summary, Murachi merely states that a temperature higher than that required for releasing NOx is required when releasing sulfate from the NOx absorbent 9.

In page 4 of the Office Action dated May 12, 2004, the Examiner states, with respect to claim 23, that Murachi discloses "control means (20, 4) for repeatedly releasing NOx adsorbed by the NOx catalyst every first interval (2 minutes) and repeatedly releasing SOx adsorbed by the NOx catalyst every second interval (60 minutes) longer than the first interval (see

Figure 5 and lines 43-64 of column 8, especially lines 57-60 of column 8)."

Applicants respectfully disagree. In Murachi, SOx is released from the NOx catalyst only when regeneration of the DPF and release of NOx take place simultaneously. Namely, SOx is released when: exhaust gas having higher temperature is introduced into the DPF; the exhaust gas burns in the DPF which results in exhaust gas having higher temperature to be introduced into the NOx catalyst; the temperature of the exhaust gas further increases as regeneration of the NOx catalyst takes place; and the increased exhaust gas temperature allows SOx to be released. In other words, in Murachi, the SOx release control takes place only when the NOx release control and the DPF regeneration control take place at the same time. That is, as long as one of the DPF regeneration control and the NOx release control does not occur, the SOx release control will never take place.

By contrast, in the claimed invention, the SOx release control and the NOx release control take place independently. In order to more clearly distinguish over the reference, claim 23 now states that the second interval is *independent from* as well as longer than the first interval.

Further, in Murachi, because the SOx is released only when the DPF regeneration control and the NOx release control take place simultaneously, intervals at which the SOx release take place may coincide with the NOx release control interval or may be longer than the NOx release control interval as shown in Fig. 5.

In the claimed invention, however, the SOx release control interval is always set longer than the NOx release control interval.

In view of this, Murachi simply does not disclose "repeatedly releasing NOx adsorbed by the NOx catalyst every first interval and repeatedly releasing SOx adsorbed by the NOx catalyst every second interval *independent from* and longer than the first interval," as recited in claim 23. Accordingly, Murachi does not disclose or even suggest the "control means" as recited in claim 23.

The claimed invention is thus not anticipated by the cited reference, and the rejection should be withdrawn.

(c) Rejection of Claims 1, 8-15 and 17 over Hepburn

Claims 1, 8-15, and 17 have been rejected under 35 USC 102(e) as being anticipated by Hepburn '685. This rejection is

respectfully traversed to the extent deemed to apply to the claims as amended.

In response, claim 1 is cancelled and rewritten as new claim 24 which now depends from claim 23.

As claim 23 has not been rejected as being anticipated by Hepburn '685, this rejection is now believed to be moot and the rejection should accordingly be withdrawn.

Claim Rejections under 35 USC 103(a)

(a) Rejection of Claims 3 and 4 over Hepburn

Claims 3 and 4 stand rejected under 35 USC 103(a) as being unpatentable over Hepburn '685 in view of design choice. This rejection respectfully is traversed to the extent deemed to apply to the claims as amended.

Claims 3 and 4, now depend from claim 24. As independent claim 23 has not been rejected over Hepburn, this rejection is believed to be moot and should be withdrawn.

(b) Rejection of Claims 5, 16 and 18-21 over Hepburn

Claims 5, 16, and 18-21 stand rejected under 35 USC 103(a) as being unpatentable over Hepburn '685 in view of official notice. This rejection is respectfully traversed.

Claims 5, 16 and 18-21 now depend from claim 23. As independent claim 23 has not been rejected over Hepburn, this rejection is believed to be moot and should be withdrawn.

(c) Rejection of Claims 6-7 over Hepburn

Claims 6-7 stand rejected under 35 USC 103 as being unpatentable over Hepburn '685 in view of official notice and design choice. This rejection respectfully is traversed to the extent deemed to apply to the claims as amended.

Claims 6-7 now depend from claim 23. As independent claim 23 has not been rejected over Hepburn, this rejection is believed to be moot and should be withdrawn.

(d) Rejection of Claim 22 over Cullen '049

Claim 22 stands rejected under 35 USC 103(a) as being unpatentable over Cullen et al '049. This rejection respectfully is traversed to the extent deemed to apply to the claims as amended.

In response, claim 22 is cancelled. The rejection is thus moot and should be withdrawn.

New Claim 24

New claim 24 is presented. Claim 24 depends from independent claim 23 and recites limitations previously residing in cancelled claim 1. As discussed during the interview, the control means described in claim 24 is neither taught nor suggested by the cited Murachi et al reference. Claim 24 should accordingly be found to be allowable, together with those claims depending therefrom.

In view of the above amendments and remarks, withdrawal of all rejections and allowance of the application is earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact James W. Hellwege (Reg. No. 28,808) at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.


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Respectfully submitted,

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